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NATURAL SCIENCE AND GRADED CERTIFICATES.

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Read before the Convention of Principals and Superintendents at Madison, December 27, 1872.

"Shall a knowledge of Natural Science be required for a Second Grade Certificate?"

The question in itself is specific, so much so that any answer, however well founded, would have but little practical value except in so far as it might be the answer to other more important and more general questions.

Moreover, the propounding of the question at this time has an evident relation to the recent action in Illinois, and to the implied query, Ought we in any measure to follow the example?

These are, perhaps, sufficient reasons for attempting to treat the subject in a more general way than the form of the question would seem to allow.

The new school law of Illinois, approved April 1, and operative since July 1, 1872, provides as follows, (sec. 50), viz.:

"No teacher shall be authorized to teach a common school under the provisions of this act, who is not of good moral character, and qualified to teach orthography, reading in English, penmanship, arithmetic, English grammar, modern geography, *the elements of the natural sciences*, the history of the United States, physiology, and laws of health."

Two grades of certificates are provided for, the grade being dependent wholly upon the degree of proficiency manifested by the candidate. The same branches are required for each grade, but the 1st grade, is valid for two years; the 2d grade, but for one year.

On request however of school directors, a provisional certificate may

be granted "to teachers who do not possess the qualifications for teaching the elements of natural science, physiology and the laws of health."

There must be, in such a case, a written request from at least two directors, setting forth that they are unable to procure a teacher qualified to teach the additional branches required by law. The examination must be just as thorough in the other branches as for the 2d grade, and the certificate is valid only for the particular district in question and for the particular term, not exceeding one year, for which the teacher is employed; this provisional certificate being evidently a simple makeshift to enable the public to accomodate itself to the new order of things without too much jar or friction.

The designation of the branches or departments of science, knowledge of which is to be required, is placed, by the provisions of the statute, upon the State Superintendent, who has made official selection of Botany, Zoology, and Natural Philosophy, in addition to Physiology and Hygiene, which are named in the law.

The reasons for this advance movement, which requires of all regularly licensed teachers, qualifications to teach the natural sciences named, are thus stated by Supt. Bateman, viz :

"If I correctly interpret these new provisions of the statute, and rightly understand the sentiments of those members of the Legislature who were chiefly interested in securing their enactment, the great end sought was to lift the schools of the State out of the grooves of a bookish routine; to redeem them from barrenness and leanness; to pour into them, and through them, the fresh breezes of life and nature; to enrich and fertilize them by the infusion of new ideas, derived from the study of the protean forms and marvelous phenomena of the material world; to vitalize and strengthen them by exercises requiring more intelligent observation and less mere memory; to turn them more from words to things, from books to nature, from the unintelligent iteration of dead forms and phrases, to a wide-awake observation and keen-sighted scrutiny of the multitudinous objects of living interest, grace and beauty with which the outer world is filled. In this way it was hoped that the schools would be quickened and vivified, the boundaries of useful knowledge enlarged, and the youth of the State be familiarized with the elements, at least, of those sciences which are in themselves so ennobling, and which are so closely related to the great industries of this commonwealth. * * *

"No doubt is entertained that it was the intention, to put the elements of the Natural Sciences into all the public schools of the State, of every kind and grade—to make the study of them as common, as universal, as the study of the seven elementary branches previously

required. It was assumed, correctly I think, that any child of suitable age and of sufficient mental and physical health and strength to attend a public school, might as well be set to learning about plants and animals; about the things on the ground beneath its feet, in the air above and around its head, in the waters of familiar streams and brooks, and in forests, orchards, meadows and gardens; as about the inanimate letters of the alphabet, the dry processes of word-making and spelling, the mysteries of pronunciation, accent and emphasis, and the abstractions of the multiplication table. While the Legislature admitted the importance and necessity of instruction in those rudiments of learning, and retained all of them without abridgment, it seemed to assume that the elements of Natural Science might be superadded, not only without detriment to the former course of study, but with positive advantage thereto, and the assumption is believed to be well founded. I do not doubt that not only as much, but more and better progress will be made in the old seven branches, in connection with the four new ones, if properly taught, than has heretofore been achieved without them, so that the gain will be more than equal to the whole amount of the knowledge of Natural Science acquired. This will result, it is believed, from the awakening and inspiring influence of the new studies upon both teachers and pupils.

"In the light of what has been said, it must be very obvious to all, that the benefits of these new studies will be best secured by the method of *oral lessons*, instead of recitations from text-books. Indeed, if the teaching of the Natural Sciences is to fall into the old ways, merely so many lines or pages of a book to be memorized and recited daily, the law might as well be repealed, for it will only enhance the very evils which have so long benumbed and stupefied the schools."

He furthermore alludes to the fact that the elements of the natural sciences have been taught for a year or more in the public schoools of St. Louis, with very satisfactory results. The inference is perhaps admissible that the action of Illinois has its origin, in the success, so far, of the St. Louis experiment. To St. Louis, then, we must look for the primary arguments in its favor.

Supt. Harris, in a special report to the St. Louis Board of Education, after saying that, so far as *complete* study and exhaustive survey are concerned, the place for the study of the sciences is in the higher course, adds,

"But there is a further question to settle: Can we not give those children who study five years or a less time in our public schools, some knowledge of the outlines of Physics and Natural History, which will

be of great service to them in after life, and for the time being not interfere seriously with the prosecution of elementary studies? This question I answer in the affirmative."

This affirmative he bases on the ground that the value of all higher studies is two-fold; that, aside from the value arising from the mastery of their spheres by a complete and scientific comprehension, there is another value arising from simply the technical mastery of the same spheres, and from the addition to one's general information, opening to its possessor whole realms of literature and of thought, otherwise not only inaccessible but inconceivable.

The theory is, to all appearance, good, but the test of practice has not yet proceeded sufficiently far. The fear will arise to some of us that the work, even with the advanced pupils in our higher courses, hardly goes beyond the lower limit of mere technical mastery, which is proposed by Mr. Harris for pupils who are not yet beyond the elementary studies.

To learn still more fully the idea and its difficulties, let us turn to the general report of Mr. Harris:

"The important point to be settled was, how to bring in these lessons, so as not to distract and dissipate the attention of teacher and pupil from other work. Fatal dissipation of energies follows from undertaking too many subjects at a time."

With this consideration the time devoted to Natural Science was limited to one hour each week, the whole to be given to one exercise on each Wednesday afternoon. The *oral* method only is employed.

He makes great account of the good effect upon the teacher of this method of presentation, and concludes by saying:

"Thus an attempt has been made to introduce the study of the sciences with all their infinitude of detail, so as to act *as a stimulant on the regular course*, as regards both teacher and pupil. It is thought that the pupil will thus receive even more benefit indirectly through the increased efficiency of the daily instruction than from the weekly lessons, and yet that these lessons themselves will be far more effective than if given in short object lessons of 15 minutes per day."

Thus imperfectly I have sketched the St. Louis idea, if so it may be called. Is it correct? Is it practicable?

If the latter question meet with a negative, it matters little what becomes of the other. Indeed, it may be still farther restricted—If practicable elsewhere, is it practicable here?

Without assuming to answer categorically, I may say that while I have faith in the idea, and believe it practicable not only in cities like St. Louis and Chicago, but also in many places of less note; I never-

theless do not believe that the time has yet come when any State, as a whole, can put it into successful operation.

Not only the deficiency of the general teaching force in intellectual resources and preparatory discipline, but also the shabbiness of so much of our supervision—or rather, the shabby public sentiment that prevents a better supervision—both stand in the way, as yet, of such an advance as the one in question.

While giving all honor to Illinois for making the doubtful trial, and hoping that she may persevere till she grows to the point of success, we may, I think, safely watch the experiment for a few years before venturing upon it ourselves.

But now another question arises: Shall we not, in view of the low standing of so many of our teachers, require them to show culture and information in other departments of knowledge than barely those which they are required to teach? Does that person properly understand arithmetic who knows nothing of its relations to other branches of mathematics? Is that person qualified to teach the history of his own country, or the science of his own language, who is ignorant of any world-wide system underlying the one or the other? Can a jeweler make a good balance-wheel while he does not understand the other mechanism of a watch?

While these queries will not be likely to meet with an affirmative, it is still competent to ask, from the other side, whether it is not better for a teacher to know thoroughly that which must be taught, and that alone, than to have a smattering of a wide range of studies, with no great proficiency in any? Whether the artisan, who is educated to the speciality of making balance-wheels and nothing else, will not make better ones than the tinker who attempts to produce all parts upon demand?

The conclusion of common sense will be, that the best workman is he who has the wide and general knowledge, with thoroughness and skill in all directions. But these, alas, are rare. The next in excellence is he who has thorough equipment for his special sphere, and some knowledge, even though it is but technical, of other, related spheres. The maker of balance-wheels needs to be acquainted with at least the general plan and purpose of a watch though he be not able to fashion any of the other parts.

Next in rank is the one who knows well his own specific work, stopping there; while still farther down is the one who knows many things partially but nothing truly.

Following these hints, the proper grading of teachers' certificates would seem to reduce to something like the following plan:

The state certificate, being the highest, should require a wide range of studies with thorough proficiency in each and all. The next grade, whether it be called a state 2d grade or a county 1st grade, should require a slightly smaller list of studies with the same high standard for the common branches, but a somewhat lower one for the others.

The next, corresponding to our county 2d grade, should call for only those branches required to be taught in the common schools, with the addition, to our present list, of Physiology and Hygiene; the required percentage, or standard, being high—at least 80 per cent.—while the lowest grade issued might correspond very nearly or quite to our present 3d grade both in studies and standard.

Then, in all grades much closer attention should be paid to the subject of Theory and Practice of Teaching, that we may be able to get out of our present vicious condition in which so many persons are licensed to teach who have absolutely no correct conception at all of the teacher's office.

Let me add, that in my estimation, county certificates might well be restricted to the two lowest grades mentioned—differing from each other only in the higher standard of the one and the addition, perhaps, of Physiology; for, so far as my observation has gone, the present first and second grades are almost valueless, representing as they do, no higher degree of proficiency in anything; while a new-made acquaintance with some of the branches called "higher" may often, by the effect on averages, tide the applicant over his deplorable ignorance of fundamental things.

Let it be once understood that a higher grade of certificate really represents a greater *fitness to teach*, and the school boards will no longer be so indifferent upon that point, while county supervision will have fewer assailants and warmer friends.

This scheme has, of course, its diffiulties. But they inhere in any plan, and no system will be perfect until we can go farther back, and give attention to the selection of teachers before their professional training begins.

Not even Normal Schools are able to evade the application of the homely old proverb about making whistles of pigs' tails.

But it is time to return to our original question, "Shall a knowledge of Natural Science be required for a second grade certificate!"

For the present, then, let me give my voice in the negative. It is hardly worth while to disturb the present system until we can sustain something really philosophical and rational. If, in time, professional discipline and public sentiment shall be seen to have made the necessary advance; or, if the Illinois experiment shall indicate by its suc

cess that the desired point has been already reached, we shall then be called upon to make the proposed requirements, not in one grade but in all. For the speedy coming of the time, "let us pray."

THE LUTHER OF ASTRONOMY.

[ADAPTED FROM THE GERMAN, BY PEN.]

On the 19th of February it will be just four centuries since Nicholas Copernicus, the "Luther of Astronomy," was born. Like his great cotemporary, Luther, who was his junior by ten years, he became the founder of a new school, a reformer and a shining light for all ages.

Copernicus (the latinized form of Copernik), was born of German parents, at Thorn, and pursued his medical, mathematical, and astronomical studies at Cracow, where he took his degrees. It was there that he heard of two astronomers who had done much for the distribution of astronomical knowledge, and, emulated by their example, he went to Italy (then the favored seat of arts and science), at the age of twenty-three, and attended the lectures of Dominico Maria, at Bologne. The talented pupil soon became the friend and companion of the professor, and but four years later we find Copernicus at Rome, himself a lecturer on mathematics, to whose lectures the learned and educated thronged with admiration. On his return home, his uncle, the bishop of Ermeland, procured for him the canonicate of Frauenburg, and he devoted himself thenceforward to his official duties, and to his mathematical and astronomical studies. Like all truly great men he was thoroughly humane, and it was his delight to aid the poor by his medical skill; his chief occupation, however, was the study of astronomy, which he was destined to revolutionize.

Before his great discovery, the science of astronomy was a strange mixture of facts and fancies, and strongly intermixed with astrology. It was believed that the earth was the centre of the universe, and the sun, moon and stars were supposed to perform daily revolutions around the earth, traveling from east to west. For the various planetary and lunary irregularities a very complicated system had been invented, in order to account for the peculiarities of these heavenly bodies, and other astronomical phenomena were explained according to the superstitious belief of the times. In short, astronomy was taught in accordance with the doctrines of the church, and every deviation from the beaten path was treated and punished as damnable heresy.

It is easy to perceive that great courage was required to proclaim so glaring a heresy as that was, which Copernicus committed, when he

announced his conviction that the science of astronomy, as then taught, was a humbug; that the sun is the immovable centre of the universe, and the earth and planets revolving around it at irregular intervals. It was simply declaring the doctrines of the Church fallacious, and freeing science from the ignoble thralldom in which it was held by the Hierarchy. Apart from the danger of uttering such heretical theories, it was unpardonable in a canon of the Church itself to shake the very foundations of the Holy Mother. Discouraged by the disapprobation of the learned, and the threatening aspect of the Church, and wholly isolated by his position, Copernicus delayed the publication of his most important work, "De orbium cœlestium, revolutionibus libri," etc., which contains the exposition of his new system of astronomy, until the year of his death. It was not accepted, however, by his cotemporaries—partly from fear of the consequences, partly from envy and superstition. But the great idea had been born into the world, and, although it was suffered to be forgotten for awhile, it was not to die! Half a century later, the famous Galileo became the medium through which the genius of Copernicus spoke to the world. In vain did the all-powerful church try to prove the truths of science to be delusions of Satan; in vain did she excommunicate, imprison, persecute and destroy—the dawn of the glorious freedom of thought brightened into day, and the fearless investigators of truth could, like Galileo, triumphantly point to the winged genius of progress, and exclaim, "And still she moves!"

The introduction of the Copenican system is not the only merit of Galileo (born Feb. 15th 1564, at Pisa,) although his manly defense of his convictions, and his suffering in consequence of his brave conduct will ever be remembered in history. Galileo vastly improved the telescope, which, invented in 1590, was unknown to Copernicus when he made his discoveries.

We have called Copernicus the "Luther of Astronomy," but this appelation is only partly applicable. He resembles the great reformer of theology in the revolutionizing of a system founded on errors, in his earnestness of purpose and in his studious habits. But he lacked Luther's fearless determination, his courage to quit a church which stood in opposition to his convictions, and his ardent longing to proclaim the new system to all the world. Had he united these qualities with those he possessed, no grander character could be conceived, than that of Copernicus.

It is no detraction from his fame, that later astronomers, with the aid of excellent instruments, and under more favorable auspices, have found many errors in the theories of Copernicus. The fundamental

laws of modern astronomy are his, and his is the merit of having broken the chains which made *Science* the slave of dogmas. Let the ghost of a gloomy past pronounce its once fearful now powerless "Anathema sit!" Truth may smile in the benign light of the 19th century, and quietly reply to the Infallibilists, "And still we move!"

VOLCANOES AND THEIR PHENOMENA.

BY M. E. WADSWORTH, MAZOMANIE.

Mention and situate the active volanoes on the globe, and explain volcanic phenomina.—*Question* 104, *Query Box, Dec.*, 1872.

It is impossible with our present state of knowledge, to tell what are active and what are extinct volcanoes, and perhaps we never can. A few examples may suffice to show that long periods of quiet does not prove a volcano to be extinct. Vesuvius was quiet from the earliest times of which we have any tradition until 79 A. D.; the volcano of Ischia had a period of rest between two consecutive eruptions of nearly 1700 years. Mt. Krabla in Iceland, remained at rest for several hundred years before 1724. No eruption of Sangay, in Equador is recorded before 1728, since which time it has been constantly active. With many volcanoes a period of quiet of one or more centuries is a common occurrence.

The following list, taken from Hitchcock's Geology, will partly answer the first part of the question. It gives the estimated number of volcanoes active during the historic period. The number of volcanoes that have been in a state of eruption during a comparatively recent period, is about 270:

CENTRAL VOLCANOES.

	On Continents.	On Islands.	Total.
In the Mediterranean Sea	1	3	4
Atlantic Ocean		24	24
Indian Ocean		3	3
Pacific Ocean		8	8
Asiatic Continent	3		3

VOLCANOES ARRANGED IN LINEAR SERIES.

Parts of Europe and Asia	3	4	7
Australia	13		13
Oceanica		188	188
North America	17	35	52
Central America	38	10	48
South America	54		54
Antartic Continent		3	3
	129	278	407

As volcanoes make their own cones, we have four classes of volcanic mountains, i. e., Lava, Tufa, Cinder and Mixed. The first class con-

ssts of lava, and the average slope is from 3 to 10 degrees. The second is formed from flowing mud from a boiling basin, or cinders wet with water or steam; their slope is generally between 15 and 30 degrees, and the layers usually slope inward towards the bottom of the crater, as well as outwards down the sides, making the crater saucer shaped. Cinder cones are of a slope of about 35 to 45 degrees. Mixed cones being composed of any two or all three of the preceding materials may have any slope between 3 and 45 degrees.

The lava of volcanoes is melted rock, and at first flows about like melted iron or glass, but it soon cools on the top and sides, and forms a crust which stops its progress unless the supply of melted lava is kept up. After a crust has once been formed then the cooling process goes on very slowly; in one case a current of lava was found hot 484 years after the eruption. When cooled the solid lavas are variously called basalt, dolerite, phonolite, trachyte, trap, etc., according to their composition, The cellular lavas are generally known as lavas, scorias, pumice, volcanic slag, etc. When lava is thrown into the air and shattered into fine fragments it forms volcanic ashes, dust sand, Lapilli, scoria or cinders, according to it appearance; and when these cinders are mixed with rain or moisture from any source, they form a rather soft, earthy, granular rock called Tufa. Besides lavas, steam and sulphurous vapors, there are evolved, sometimes, carbonic and muriatic acid gases which are probably derived from lime stone and sea water.

The columns of fire said by many to issue from volcanoes, are not flames, but columns of incombustible gases "illuminated by fragments of red hot rock and molten lava thrown up along with the gases (like sparks in fireworks), assisted by reflection from the red hot sides of the crater itself, and from the surface of the molten lava below."

The rising of lava in the crater, and the projectile forces displayed, seem to be caused mainly by the expansion of vapors. In very liquid lava the projectile force is slight, while in viscid lavas the force is very great. The rising of the lava in the crater and the expansive force of the vapors causes an eruption either over the top of the crater or through its sides. The hydrostatic pressure of the lavas or of vapors suddenly evolved may, and frequently does, cause fractures of the mountain, which allow the lava to escape below the top of the crater. Where these fissures remain filled with lava they form dikes, similar to those we see in ancient igneous rocks, which make the mountains even stronger than before. Volcanoes seem to be caused by a sea of molten matter in the interior of the earth, or else by chemical reactions.

The foregoing is only a partial answer to question 104, which is too general to receive an exact answer if it were possible to give one.

UNIFORMITY OF TEXT-BOOKS.

BY G. W. CURRIER, SUN PRAIRIE.

I do not wish to place myself in the attitude of a fault-finder, but merely to offer a suggestion, with my reasons for the same.

I am well aware that a large and efficient army of men and women are at work trying to carry on and improve our system of education, and they are making marked progress, but I often think that the village and city schools receive more than their proportion of attention.

I have been impressed that an improvement might be made in our method of selecting and recommending text-books for the use of common schools.

The present law leaves the matter wholly in the hands of the district boards, and works very well in towns where men are put in office who take an interest and do their duty, but in the country the result is, that in a great majority of cases, no selection is made, no alteration, only as each new teacher recommends his favorite works, thereby increasing the number, without getting any nearer uniformity.

Why is this? In the first place, in many cases the board are wholly indifferent. The custom (fast becoming the prevailing one) of carrying politics into school affairs, although a miserable practice, finds followers in the most rural districts, and although the offices are of no pecuniary benefit, we find men scrambling after them out of mere spite, consequently, when once gained, they wish to be bothered no more.

Secondly. Many of the district boards are not competent to make a selection (not to speak disrespectfully), for out of the multitude of works on every subject, men of more than ordinary ability are needed to distinguish the best, and we want only the very best.

Thirdly. They are afraid of making a fuss in the neighborhood. They say "Mr. A. bought new books for his children, and he don't want to change. Mr. B. has some books that he used when he went to school, and he can't afford to buy new. So teacher do the best you can, for we don't want trouble." Let me give you, as a moderate example, a list of books in my school this winter, after doing all in my power to secure uniformity, (a school of about forty pupils):

National Fifth Reader; Sanders' Fourth, Third, Second and First

Readers, and Primer; National First Reader; Sanders' Speller; Kerl's Grammar; Cornell's First Lessons in Geography, Primary and Intermediate; Ray's Mental Arithmetic, First Steps in, and Third Part; Robinson's Mental Arithmetic; Davies' University Arithmetic; Loomis' Algebra; Cutler's Physiology; Barnes' History; and Warren's Physical Geography.

I am not complaining of the books, for most of them are good, but I dislike the mixture.

Now since, in my opinion, it is impossible to get district boards to act in the matter, I will give my plan briefly and imperfectly, and one that is not simply an experiment, but that has been satisfactorily tested in neighboring States:

Let a law be made, constituting a State Board, consisting of the State Superintendent, President of University and Secretary of State. Let it be the duty of said board, at a meeting duly announced to publishers and all interested, to select a list of books suitable for use in all our common schools.

Let this board contract with publishers for books in exchange for similar grades now in use, and for the best possible introductory rates on all others. Make it binding on every district in the state to procure and use said books, allowing sufficient time to effect the change, and let there be no alteration made for a term of three or five years, in the list first recommended.

No great amount of expense need be incurred, for it would be an object to publishers. Men competent to judge of the merits of the books would be secured. Teachers could then own a copy of each book used in school, whereas now teachers moving every term or two must own a traveling book store in order to do this, saying nothing of expense, which of course is not worth mentioning considering the very magnanimous salaries paid in our rural districts.

Let the many readers of the Journal give this matter a careful consideration, more especially for the sake of our primary schools where some change is surely necessary.

ORGANIZATION, voluntary movement, life, exist only at the surface of the earth, in places exposed to light. One might say that the fable of Prometheus's torch was the expression of a philosophic truth that the ancients had not overlooked. Without light, nature was without life; she was inanimate and dead. A benevolent God, bringing light diffused over the earth's surface organization, light, feeling and thought. —*Lavosier.*

IS A UNIFORMITY OF TEXT-BOOKS DESIRABLE?

BY S. D. FORBES, MARQUETTE COUNTY.

Contrary to traditionary opinion, I shall presume to answer the above question in the negative. The common notion that a uniformity of text-books in a school is necessary to a proper classification, originated, I must believe, among incompetent teachers, who had no higher conception of an instructor's duty than that of hearing pupils rehearse words memorized from the book. As many of this class of teachers are still employed to "keep school" it is not strange that the affirmative has yet numerous advocates. Take from them the text book and you have robbed them of their only "stock in trade." Require them to teach *subjects*, instead of occupying the dummy stool as mere objective points for pupils to project their recitations at, and their calling is gone.

A teacher well qualified for his work has little use for text-books except for occasional reference, and for this purpose he finds a variety of authorities on the subject in hand better than one. "In multitude of counsel there is wisdom." Those who teach *books* require a uniformity; but those who teach *subjects* derive a positive advantage from dissimilarity, which need in nowise to interfere with proper classification on the basis of capacity. The *matter* of modern school books is substantially the same, wording and arrangement constituting their chief difference; and a teacher who squanders his time with a half dozen classes, of perhaps one pupil each, because of a difference in books, betrays his incompetency.

Let the teacher assign a topic to the class, and tell them to seek information from every available source, in books and out of books. Scholars are apt to think that the text-book contains all that is needful to know. Awaken the spirit of inquiry, give it an unlimited range, and they will soon convince themselves that school-books are not the sum of all human knowledge. This, in itself, will be an important item of knowledge. Recitations thus prepared will not be such spiritless affairs as when they consist in repeating the text *verbatim et literatim*, with a scrupulous avoidance of taking aught therefrom or of adding a little thereto. A pupil's proficieney in arithmetic is tested by his understanding of *principles*, not by what he knows of the rules and formulas of Ray, Robinson, Thompson or Davies; neither is it of any consequence whether the pupil studies Kirkham, Clark or Kerl, so that he has mastered the laws of grammar, and is able to use language correctly. All of these authors may be good exponents of the

subjects they treat upon, but none of them knows everything. Each has his peculiar excellence, as well as his pet hobby and vagary. They are good counsellors, but not infallible guides. The scholar should be encouraged to consult all authorities within his reach, and then to form an opinion of his own, and to express it in his own language. This, in my opinion, is what a recitation should be. It is of far less consequence what the *book* is than what the *teacher* is; for outside, and beyond all that the best books could contain, are the explanations, illustrations and adaptations of the subject, which must come from the teacher. Upon his skill and ingenuity in presenting the theme so as to elicit interest and thought, depends in a large measure the benefits the pupils will derive from the study. If a teacher can once get his pupils to investigating and *thinking*, all trouble about text books will vanish. When the real process of *educating* begins, all questions as to "what books," become subordinate and immaterial. A teacher who never goes beyond the text—who knows no better way than to read book questions, and to listen to book answers, has no part in the work of education. Yet such is the practice in a majority of our country schools, whence proceeds the cry for a uniformity of text-books.

HOW FAR.

BY EMMA S. LANDON, LAKE MILLS.

The real clasps hands with the ideal. The line is slight, to our eyes, that divides the shadow from the substance. Mind and matter struggle, each for the mastery.

With this for a foundation, the subject looks intagible,—How Far? —a question asked by every intelligent mind in its efforts to solve the intricate problem of life. Can we, and is it of vital importance that we should, define the line that separates the shadowy, the vague, the uncertain and the impossible, from that which is real, true, certain and possible? Why is it that the shadow throws itself upon, to us, our most important work, impressing us that its accomplishment has been for naught? Teachers finish their work with a conviction that school is an idle show and themselves chief actors. The laborer rebels against the honest toil that gives daily bread to his little ones, and argues the question of "To be, or not to be." It is this feeling in extreme that actuates those who leave us this legacy—"Tired of life," and their own hands lay aside the barrier between them and eternity, and they step into the beyond.

As educators, have we not allowed this glamour to thicken around us, until it shows in the inefficiency of our work? What is the remedy? Shall we listlessly dream with the idle throng? Shall we float rudderless, anchorless, wherever tide of feeling carries us? There are thousands to-day who are helpless, and to whose lips rises the cry of "Oh, for a man to arise in me that the man I am may cease to be."

Have we defined the line, have we named the remedy, when we call it Earnestness? That is what we need to give character to our work, something to raise it above mere drudgery and to make it more than employment. Not in earnest, merely, as concerns our own ends and the furtherance of *our* aims and projects, but in earnest as regards the work itself; giving *it* the benefit of every energy unbiased by selfish motives. We are safe as long as we are in earnest. Thus far and no farther.

THE "WORD METHOD."

BY S. D. FORBES, PACKWAUKEE.

P. P. Iverslee, in the December "Query Box," expresses disapproval of the "word method" of teaching children to read, "seeing no possible reason why children who do not understand English should learn English words any more easily than the names of letters." I would ask Mr. Iverslee, if, in his teaching, he puts *words* subordinate to *letters*, or whether learning the letters is merely a step to the formation of words. Admitting that learning the names of the letters is necessary, if this can be done incidentally—as we know it can—while teaching the "word method," is not a great saving of time? By the "old method" letters are mere abstractions to the mind of the child, until he learns to form them into words—the concrete units of language. Let him proceed from the word to its elements, and letters cease to be meaningless abstractions; they become parts of known things.

"That system is best which teaches least." The teacher in showing the child how to form words on the slate or black-board, will have occasion to mention the names of the letters, and in this way the pupils will master the alphabet without any direct effort on the part of the teacher, and in a much shorter space of time than is usually occupied in teaching the letters alone. How long would it take a child to learn the names of twenty-six scholars with whom he daily associated? Ordinarily two or three days, or a week at the longest; and this he would accomplish "without being taught."

Why should he not learn the twenty-six letters of the alphabet as

soon, if presented to him in the right way? Experience proves that he will. Therefore the time spent in teaching the "A B C's,"by themselves, is wasted, since, by the "word method" the child will learn them much quicker and accomplish much beside, in the meantime. This, I think, fully explains how "children can learn the names of the letters without being taught," and also answers the "query" *when* they learn the letters of the alphabet by the "word method."

VISIT YOUR SCHOOLS.—We wonder how many parents and guardians, whose eyes will fall upon the three words heading this article, ever thought of the encouragement afforded a teacher, or the new interest awakened in a pupil, by a visit to the school-room?

Day after day, through ten long months in the year, the teacher patiently toils amidst the same scenery and same surroundings to expand the minds under his or her charge, and at the end exhibit it to the parent or guardian a faithful record of services, evidenced by the advance of the scholar to a grade of intelligeuce of which both parent and scholar are proud. While this gradual change has been taking place, while this nature was being fashioned in such manner as to affect, perhaps, the whole future life, how much actual interest have you manifested? How many visits to the school room have you made? How much of the teacher's system of instruction have you made yourself familiar with?

We ask these questions of parents because of all the records of schools we have examined, a very meagre showing exits of visits. Strange, is it not, that in one of the most important matters connected with the future of their children, parents should exhibit so much indifference. The farmer who, in early spring, sows his wheat, watches with anxiety its appearance, aud gives it daily attention; or carefully notices the tendency of growth of the young fruit trees of his orchards, ready to correct, by supports, any tendency to becoming crooked; yet of many spare moments that he has, he thinks not once of visiting the school room, where his boys or girls are receiving mental impressions that, once attaining full growth, he cannot correct, if erroneous.

The sturdy blacksmith watches closely the iron which he heats to render it more susceptible to his hammering, yet gives no attention to the forging going on in the school room, of the natures and characters of his children.

Now whence proceeds this seeming indifference? Is it over confidence in the teacher, or does custom bind him as well as blind him to the evil of carelessness in this respect? The truth is, he utterly fails

to appreciate the vocation of the teacher. He looks upon him as a machine instead of a central figure from whom diverges streams of light, the light of intelligence, to hungry and impressible little minds. It should be his special province as parent or guardian to watch that light, and see that it falls fairly upon the minds of the children, rather than tending to fall so as to produce mental obliquity. Flatter not yourselves, parents and guardians, that your responsibilities cease when the children have been hurried off to school. Your care should extend within its portals. Visit the school room frequently. Familiarize yourself with the teacher's system of instruction. If he or she is worthy, drop kindly words of encouragement. The school room will have derived a cheerful aspect from your visit, most sensibly felt by both teacher and pupil.—*Texas Free School Advocate.*

TO TEACHERS WITHOUT EXPERIENCE AND WITHOUT TRAINING.

There are about 200,000 teachers of public schools in the United States. Of these about one-fourth retire from active service every year, leaving their places to be supplied by others. If all the Normal schools (real and nominal) in the country were filled to their utmost capacity, and one-fourth of their students graduated every year, there would be an annual supply of about 3,000 trained teachers. Let us supppose that nature is is as prolific as art, and that 3,000 other teachers, with the stamp of native genius on their brow, though with no diploma of the schools in their hands, make their annual debut. After making these allowances we have an annual influx into the schools of 44,000 teachers, neither "born" nor "made"—chiefly young persons without experience and without special adaptation, whom necessity, or friends, or fate, has transformed into school masters and school mistresses for the nonce.

The great educational problem of the age is, how shall this great army of raw recruits be converted into disciplined and steady soldiers. Our hypothesis has reduced the problem to its lowest dimensions. We have made the largest possible deduction for teachers of "experience," so-called, for trained teachers, for teachers "to the manner born," and yet we see that there must be a very large residuum, whose qualifications for their work must be developed after they have entered into office, if they are developed at all. It is to this large class, and especially to that large fraction of it, who are honest, conscientious, indus-

trious and desirous of improvement, that we purpose to offer a few words of advice.

1. Practice alone will not make a man a better teacher. If a man starts wrong, the farther he goes the worse. So a teacher who has been on the wrong track, for twenty years, is a worse teacher than he was when he commenced. Errors, which were at first doubtful propositions, are now self-evident truths. His professional vices are elevated into cardinal virtues. The Ethiopian can not change his skin nor the leopard his spots. Therefore this paper is not written for "experienced teachers." Practice, by itself, enables us to do easily that which we do very often; but not, necessarily, to do it better. The man of eight and forty does not write a better hand than the boy of eighteen; but the sense of effort has passed away. A woman at forty is not necessarily a better teacher than she was at twenty, but she does her work, such as it is, with less labor. Notwithstanding the changes which normal schools, teachers' institutes, and educational journals have inaugurated and advocated, the traditions of the last century are still the common law of the individual. That which has failed in the general system will fail in the particular instance. Practice or experience alone will never convert the wrong into right, although it may may help to obscure our perceptions regarding them.

2. The first and indispensable condition of improvement is a conviction on the part of the teacher that improvement is desirable and attainable. One of the earliest symptoms of spiritual decay is self-righteousness. One of the surest signs of intellectual demoralization is pride of knowledge. The most heavenly minded men are the most humble; the most learned men are the most modest. The greatest teachers are always searching after a better way. "Not as though I had already attained, either were already perfect," is their motto. "Our school system," says the mayor of one of our great cities, "does not seem capable of improvement." Most probably the mayor was right, though not in the flattering sense in which he desired his words to be understood. The young teacher, however, is not very likely to give way to vain-glory. If he is not utterly devoid of common sense, the every day work of the school-room will, at least, take the conceit out of him. The danger lies rather on the other extreme, that, finding his best efforts comparatively fruitless, he may become discouraged and take refuge in formalism, resting satisfied with a perfunctory discharge of the routine duties of his office. This is the sleep that ends in death.—*National Teacher.*

To please the world, a mortal thou must be.
At heart old age, in mind dull infancy.—MIRZA SCHAFFY.

WINTER.

BY D. F. REID, PEPIN COUNTY.

Old Winter spreads his dreary vail
  O'er many a northern clime;
And sturdy oaks, and floweret frail
  Confess "the march of time:"
And birds, of every wing and song,
With voices sweet, and clear, and strong,
  Forget their merry chime.

The timid deer comes stealing by,
  And seeks the shrubby lawn,
To feast on foliage, brown and dry,
  When better fare is gone;
When suddenly, in looking back,
He spies the huntsman on his track,
  And swiftly "journeys on."

The geese and ducks have left our lakes,
  To seek some mild retreat,
Where biting Boreas seldom makes
  His frosty winter seat.
The Chippewa is nowhere seen;
And Mississippi rolls serene
  Beneath a snowy sheet.

The teacher sails in wisdom's bark
  From boarding house to school;
Dull scholars reach the shining mark
  By "sticking to the rule;"
While "Sharp," whose powers the world surpass,
Slides *down* in each *ascending* class,
  And *graduates* a FOOL.

Oh! how I love the great North West,
  Its rivers, bluffs, and plains;
Its mammoth prairies, still at rest,
  Where Solitude yet reigns;
Its boundless fields of waving grain,
Its richly freighted boat and train,
  The source of untold gains.

Oh! could I see the glorious sight,
  As erst, in youthful days,
When thousands gathering day and night
  Rejoiced in prayer and praise.
Dear Savior! here thy words are true,
"The harvest great, the reapers few;"
  And so the work delays.

Education in Switzerland.—Switzerland presents, perhaps, the closest analogy to our own country in the organization of its system of public instruction. It is divided into twenty-two independent cantons, each of which manages its own internal policy after its own peculiar views; so that the educational systems of the several cantons differ materially, while the Federal government, which unites them all, brings all into intimate connection, one with another, and facilitates improvement, as the institutions which are found to work best are gradually adopted by the different governments. With a few exceptions, education is compulsory, throughout all the cantons, for children between the ages of six and fourteen.

The working of the educational system of Switzerland is characterized in all its details by great liberality of religious sentiment. This does not proceed from an indifference regarding forms of faith, for no master can obtain from the government of his canton a diploma to enable him to officiate as school master, without first having obtained from a clergyman of his own church a certificate of moral character and of competency to conduct the religious education in the school for which he is destined. It proceeds rather from a recognition of this great truth—that the cause of religion must be deeply injured by neglecting the secular education of the people, and from a Christian resolution in all parties to concede somewhat for the sake of insuring what must be the foundation of all social improvement, the advancement of the intelligence and morality of the people.—*Exchange.*

The Need of Education.—We know no barrier, we recognize no limit to the extension of our schools, until the blessings of moral and intellectual culture are tendered to every solitary pupil of every age within our state and land. We court, nay we implore, the assistance of all our fellow-citizens in this noblest of all objects. An ignorant people always has been, and always will be, a degraded and oppressed people; they are always at the mercy of the corrupt and designing. In vain shall we trust to physical strength to guard us from foreign hostility or domestic violence; to a seacoast girt with a thousand fortresses, or a frontier bristling with a thousand bayonets; to armies, fleets, or military skill, if we fail to cultivate the *moral* strength of our people, to enlighten the intellect, to purify the heart, to arouse and dignify the best feelings of our nature, and to stamp upon the character the proud feeling of independence, which is founded only upon knowledge and self-respect. If we fail by education to awaken, guide and confirm the moral energies of our people, we are lost.—***Thos. Dunlap.***

THE MYSTERY OF AMERICAN WINTER STORMS.—The researches of Signal Office at Washington have just been rewarded by a beautiful and highly important meteorological discovery. On the coast of England, from time immemorial, the phenomenon of the great November atmospheric wave has been the speculation of scientists and seaman; but Sir John Herschel and others have supposed it was peculiar and confined to England and Western Europe, which it reaches from the South Atlantic, and over which it rolls in long continued undulations from October to January, constituting an important element in the phenomenal character of European winter. On the 12th of Novemember a smilar atmospheric wave began to break over the shores of shores of Oregon and British Columbia, as shown by the weather telegrams. By the evening of the 13th it had spread over nearly all of the Pacific States and Territories, Utah and Nevada, and at midnight was pouring through the passes of the Rocky Mountains. On Thursday, the 14th, it descended upon Colorado, Nebraska, Kansas and the Indian Territory. On Friday morning it extended in unbroken magnitude and magnificence from Oregon and Washington Territory eastward through the great trough or depression of the Rocky Mountains backbone in Idaho and Montana, and stretched thence to the Lower Missouri and Lower Mississippi valleys, and over the western shore of the Mexican Gulf.

This discovery will enable meteorologists to anticipate, by many days, the approach of winter, as it advances from the Pacific coast eastward in the great current of westerly winds. It serves to clear up the old mystery of American winter storms, showing that they originate in the Rocky Monntains, upon whose cold and loftiest summits in Nevada, Utah, Colorado and Southern Wyoming, the vapor-laden air of this wave, coming from over the warm Pacific, is now seen to be condensed in the overwhelming snows of the forty-first parallel. As this vast ærial wave is probably like the English wave, continued in successive undulations for two or three months, it may assist in explaining the comparatively high temperature and light precipitation in winter along Puget's Sound and eastward.—*Exchange.*

HOME CONVERSATION.—Children hunger perpetually for new ideas. They will learn with pleasure from the lips of their parents what they deem it drudgery to study in books; and even if they have the misfortune to be deprived of many educational advantages they will grow up intelligent if they enjoy in childhood the privilege of listening daily to the conversation of intelligent people. We sometimes see parents who

are the life of every company which they enter, dull, silent and uninteresting at home among their children. If they have not mental activity and mental stores sufficient for both, let them first use what they have for their own households. A silent home is a dull place for young people, a place from which they will escape as soon as they can. —*Chicago Schoolmaster.*

Official Department.

OFFICIAL OPINIONS.

Prepared by the Assistant Superintendent.

Q. It is desired to attach our district to an adjoining one, and then have a new school house, on a different site from either of the present ones—(both school houses are nearly worthless). How shall we proceed?

A. The town board alone has authority to make the first charge, which they would do, probably, if strongly petitioned by both districts, and if no families would be much discommoded. After the districts are consolidated, by adding one to the other, it can be voted, at a special meeting, to change the school house site, and the old school houses can be sold.

Q. Is a district clerk to take the items of personal property, or only of real estate, in the district?

A. The intent of this question is not very clear. A district clerk is required, under section 62, to return all taxes voted at the annual meeting, etc.; he is not required to return the "items" of real or personal property, but only the names of persons or corporations liable to taxation. There is a special provision in section 62, in regard to joint districts.

Q. We wish to establish an academy in this town, several districts uniting in the purpose. How can it be done?

A. You can establish a high school, under section 22, (p. 55), by forming a "union district" for that purpose. An academy can be organized by individuals, under chapter 55 of general laws of 1858. The best way is for your town to adopt the town system (School Code, after p. 136), and establish a central high school for the town.

Q. Does it require a majority or only a plurality of votes to elect a district officer when there are three or more candidates?

A. A plurality of votes elects in all cases, in this state, unless there is express provision that the election shall require a majority

as in the case of a senator of the United States. This question received a different and incorrect answer in the November issue of the Journal, 1871.

Q. Is a foreigner, who has declared his intention to become a citizen, and is entitled to vote, also eligible to a school district office?

A. It may be held that he is, as there is no restriction of law in regard to minor offices. In other words, the right to vote implies the right to be elected, if the latter right is not restricted by statute.

Q. Being called away from home three months, I found another person elected and acting as clerk in my place on my return. Now, am I the clerk, or is he?

A. The record of the election is *prima facie* evidence that the person elected is the lawful clerk. If he has entered upon and exercises the office, he must be assumed to be the lawful clerk, until the election is set aside by competent authority. It is to be presumed that the district went into an election on the assumption that the office was vacant, from your removal.

Q. If a town votes that the money raised by the same for school purposes shall be divided equally among the districts, is it legal to divide it in this way?

A. This money must be apportioned by the town clerk to the districts in proportion to the number of legal children residing in each, at the last report, as required by section 58, of the school law.

Q. If a district votes $500 at the annual meeting to build a new school-house, can the vote be rescinded, at a special meeting, and a vote taken to use it in repairing the old school-house?

A. It must be held that this would be lawful. A district has a right to change its mind, and in this case the money will be applied to substantially the same object as that contemplated in the original vote.

Q. Our district clerk, by mistake, did not return the tax for teacher's wages large enough into $100. Can we borrow the money, or must we raise it by special tax?

A. (Dated January 22, 1873.) You can raise it by special tax under section 64. The law gives no power to a board to borrow money, nor to a district, except under section 114, and under chapter 42 of General Laws of 1871, and for the purpose of building a school-house alone.

Q. At our annual meeting, we voted one general tax for school purposes, under the head of "incidental expenses." Can we apply a part of the money to repairing the school-house?

A. The law does not authorize raising taxes in such a way. If the

tax is assessed and collected, it will be as proper to use some of the money for repairing the school-house as for other purposes.

Q. If a district treasurer is re-elected is his old bond sufficient, if the bondsman consents that it shall continue in force?

A. The only proper way is to have a new bond executed, signed and approved by the director and clerk. The same party may be accepted as surety, if thought proper. Verbal renewal is not enough.

Q. If a treasurer files his bond within ten days, approved by one member of the board but not by the other, will the approval of the bond by the remaining member, aftewards, be sufficient? (A prominent lawyer here says, yes; the county superintendent says, no.)

A. The county superintendent is right. Under section 35, the "office shall be vacant" if the bond is not approved by both, within the ten days.

Q. Our clerk and director loaned the treasurer $50, and he has gone off. Who is liable for the money? the treasurer's bondsman disclaims liability.

A. The clerk and director have no power to loan money belonging to the district, to the treasurer or anybody else. The bondsman of the treasurer is liable, just the same as if the clerk and director had not pretended to make such loan.

Q. Is a district treasurer entitled to fees for collecting a district tax?

A. There is no authority of law for his taking fees or percentage.

Q. Is a district, which is building a new school-house, on the site of the old one, and is unable to obtain a room, so as to make out five months school, entitled to be included in the apportionment of school money by the State Superintendent, under chap. 163, Gen. Laws of 1872?

A. This cannot be regarded as an "unusual and an unlooked for cause," within the meaning of the law. Before resolving to give up or raze the old school-house, it should be ascertained whether a room could be obtained; and if not, the five months school should be first completed, unless it should be deemed of more advantage to the district to expedite the building than to secure the school money.

Q. Can a district board allow the teacher to teach on Saturdays, if the contract calls for 22 days to a month?

A. It is lawful for the board to agree in any case that the school shall be taught on Saturdays, but this should be stated in the contract. If not so stated, the agreement may be added, both parties signing the stipulation.

Q. Is a youth of eighteen, whose father had "given him his time," a right to attend school in the district in which he may be living, or only where his father lives?

A. If he really his own master, by some legal act of manumission, he takes his residence with him, and should be allowed to attend school where he may live for the time being. It is not the policy of the law to exclude any one of school age from school.

Q. If a teacher engages to teach a school in which branches of study are to be taught not covered by his certificate, would it be proper for the county superintendent to annul his certificate?

A. No, but under section 105 he may "demand an examination in such additional branches," and if the teacher does not sustain the examination, then his certificate may be revoked.

Q. If a superintendent grants a license to teach in a certain district, provided "all the board agree to hire him," will a contract be lawful if signed by only two of the board?

A. A majority of the board can hire a teacher. A superintendent has no power to impose a different condition. If a teacher is hired under such an anomalous license, the doubt should be construed in his favor, and he should be considered entitled to his wages.

Q. Has a district board the power to adopt a course of study for a district school, and to compel all scholars to pursue that course? If so, is the course liable to be changed by each new board?

A. Under section 52 the board has this general power, and scholars who attend school must comply with the rules of school. A school board also has power to revise its own action, but it may be hoped would not capriciously change a course of study laid down.

Q. On a certain cold day, 60 per cent. of the scholars, in one department, were absent, and the teacher counted 40 per cent. present, and another teacher, with a similar per cent. of actual attendance, counted all, or 100 per cent. as present. Which was right?

A. The teacher of course who conformed to fact and not to fiction. Unless statistics are truthful, they are worse than useless.

Q. Am I entitled to a part of my wages before my term of four months closes?

A. This depends on the terms of the contract. If in the form given on page 107 of the school code (No. 24), the wages would not be due till the time named. If the contract simply agrees upon a rate of wages per month, it is probable payment might be demanded monthly.

Q. If a teacher's contract states that he shall receive his pay "on or before" the first day of March, cannot he draw his pay at the end of each month preceding the above mentioned month if he desires so to to do? Can the clerk refuse to draw an order or treasurer refuse to pay the same?

A. This is answered above.

Q. If the clerk would not hire, and the other two members of the board hire without first calling a meeting of the board, can the teacher compel the board to pay him, as agreed in the contract?

A. The clerk has now no authority to hire—the board is to hire; and, as in the transaction of other business, should call a meeting. It must be held that without doing this, two cannot contract legally. Whether a court would adjudge the teacher entitled to compensation for services rendered to the district, would be for the court to decide; also the other question, whether the two persons hiring would be individually liable.

Q. The district board closed my school for three weeks, on account of a case of small pox. Am I entitled to wages mean time?

A. If the school was closed without your consent or wish, and you stood ready to perform your work, you are entitled to your wages.

Q. Is there any law allowing or prohibiting pupils attending the common schools in the state, after they are twenty years of age?

A. There is no provision of law upon this subject, except in section 19, of the School Code (sub. section eleventh, p. 50), which permits the attendance of such persons under the conditions those named. Section 3, of article X of the Constitution, prescribes the ages between which pupils may attend free of tuition.

Q. How can a district obtain a new Webster's dictionary, when the old one is worn out or lost?

A. Make application to the state superintendent, according to form 58 or 59, in School Code, p.p. 222-3, and send $8, the cost to the state.

Q. How is a dictionary obtained, in the first instance, free of cost?

A. By making application according to form 55, 56, or 57, as the case may require. (Blank forms for application, of either kind, will be sent when asked for.)

Query and Scrap Box.

QUESTIONS ANSWERED.

We have solutions of Question 97 (Oct. No.), from T. KUDER, Milwaukee, and J. B., Fond du Lac, which were overlooked, but as it has been sufficiently discussed, the answers are omitted.

109.—The solutions of question 109, given in the last number of the JOURNAL, are incorrect. Enclosed I send you a correct solution of said problem.—L. CAMPBELL.

A pole 54 feet in height, perpendicular to the horizon, and standing on the side of a hill, was broken, but not completely severed, the top resting on the ground 30 feet down the hill from the foot of the pole, the horizontal distance of the broken part from the bottom of the pole being $10\frac{1}{2}$ feet; required the height of the stump.

Let AB+BC=54 feet, the height of the pole; AB representing the stump, and BC the broken part. Produce AB to E, and draw AH and EC at right angles to BE. Then, by the question, AH=$10\frac{1}{2}$ feet and AC=30 feet. Place AB=x, BC =$54-x$, and AE=y. Since AEC is a right angle, $30^2-y^2=(54-x)^2-(x+y)^2=$ EC^2, from which we obtain

$$x(y+54)=1{,}008\ldots.(1).$$

The triangles ABH and EBC being similar, and EC=$\sqrt{30^2-y^2}=\sqrt{900-y^2}$, we have $x : 10\frac{1}{2} :: x+y : \sqrt{900-y^2}$. Hence,

$$21\ (x+y)=2x\sqrt{900-y^2}\ldots.(2).$$

From equations (1) and (2) we find x=14 and y=18. Therefore AB=14 feet= height of the stump.

Another Solution. 54÷3=18, the distance the top struck below the bottom of the pole.

$\sqrt{30^2-18^2}$=24, the distance of the base at the top of the pole when broken.

54+18=72.

$\sqrt{72^2-24^2}$=32−18=14.

Answer, 14 feet.—J. R. Ralph, *Hazel Green.*

[D. sends an algebraic solution, making the height of the stump 15.07 feet.]

115.—Why is limestone, after being heated, lighter than before; and why does the application of cold water cause it to effervesce (froth up) and become hot?

Limestone after being heated is lighter than before because it has parted through the action of heat with its water and carbonic acid. The application of cold water causes limestone to effervesce or become hot for the following reason: Heat is always given off when a liquid is converted into a solid form. This latent heat, which was in the water before, is evolved when the water changes its liquid form by being incorporated with the lime.—Theo. Kuder, *Milwaukee.*

117.—Why do we find grass and herbage wet with dew, while rocks, equally exposed, remain dry? Why is there more dew in clear nights than in cloudy ones? What causes it? and where does it come from?

The deposition of dew results from a moist atmosphere coming in contact with a substance cooler than itself, whereby its temperature is lowered, and its capacity for holding moisture proportionally lessened. Consequently it parts with a portion of its moisture, which appears condensed upon the cooler surface. Grass and herbage, owing to their loose texture, radiate heat faster than rocks; therefore become cooler and condense more vapor. Clouds interefere with radiation and thus prevent the earth from cooling.—H.

Second Answer.—As grass and herbage are filamentous substances, they part with their heat more readily than stones. Therefore dew is more plentifully deposited on plants thus on stones. 2d. Because bodies cool more rapidly on clear nights than on cloudy ones. 3d. Dew is a result of an alteration of temperature after sunset. 4th. It is the moisture collected during the night in the form of small drops of water on the surface of plants and other bodies. It comes from

the air whose vapor is condensed by coming in contact with cooler bodies.—SELF RELIANT, *Rio.*

Third Answer.—Grass radiates heat faster than rock, and is cooled to the dew-point, while the rocks are not so cooled. 2. On a clear night radiation is not prevented by the clouds, nor is the heat reflected back as it is on cloudy nights; hence the earth becomes cooler on clear nights and more dew is formed. 3. It is caused by the cooling of the atmosphere below the point at which it can contain all its aqueous vapor. 4. It is water which before it set up in the dew business was invisible in the air as vapor. 5. It comes *out* of the air which envelopes herbs and grasses, it may be seen to form very rapidly on pitchers filled with ice-water in summer. The air contracts when in contact with cold substances as you would contract a sponge by squeezing it, and the water leaves it.—J. B. *Fond du Lac.*

Fourth Answer.—After sunset the earth radiates the heat which it has received during the day from the sun; and it becomes so cold thereby that the vapor contained in the lower strata of air is chilled by contact and condensed into dew. Grass, wood and leaves radiate heat most readily and will be densely covered with dew, while rocks, though equally exposed, remain dry because they are so compact and hard that they can neither absorb nor radiate much heat.—T. KUDER, *Milwaukee.*

[C., *Mazomanie*, sends a long answer, which will be more appropriate as a separate article.]

[As the following question was printed last month, a period was placed after the word distance, in the second line. In consequence, it was differently apprehended by those who have sent solutions. A solution of this question—119—by K. S. is omitted, for the reason that it is not quite intelligible. Matter for publication cannot be written too plainly, especially if containing figures.]

119.—A and B travel in the same direction, A is 30 miles ahead; one-half the distance A travels in three-quarters of an hour, equals two-fifths the distance B travels in two-thirds of an hour; how far must B travel to overtake A?

Since $\frac{1}{2}$ the distance traveled by A in $\frac{3}{4}=\frac{9}{12}$ of an hour, is equal to $\frac{2}{5}$ the distance traveled by B, in $\frac{2}{3}=\frac{8}{12}$ of an hour, the whole distance traveled by A in $\frac{9}{12}$ hours equals $\frac{4}{5}$ the distance traveled by B in $\frac{8}{12}$ hours.

Then $1\div\frac{4}{5}=\frac{5}{4}$, the number of times B, in $\frac{8}{12}$ hours, travels the distance that A travels in $\frac{9}{12}$ hours; and in the same time B will travel as many times $\frac{5}{4}$ as $\frac{9}{12}$ is times $\frac{8}{12}$.

$\frac{9}{12}\div\frac{8}{12}=\frac{9}{8}$; and $\frac{5}{4}\times\frac{9}{8}=\frac{45}{32}$; that is while A travels 32 miles B travels 45 miles, and gains 13 miles. To gain 30 miles, he must travel as many times 45 miles as 30, the number of miles to gain, is times 13, the number of miles gained in traveling 45 miles.

$30\div13=2\frac{4}{13}$; $45\times2\frac{4}{13}=103\frac{1}{13}$ miles, the distance B travels to overtake A.—JUL. H. BUNKER.

According to the conditions of the question, B travels as far in $\frac{2}{3}$ of 40 minutes, or in 16 minutes, as A does in 45 minutes. Hence B travels $2\frac{13}{16}$ times faster than A. When A advances 1 mile, B advances $2\frac{13}{16}$, gaining $1\frac{13}{16}$.

A will travel as many miles as B's gain is contained times in $30\div1\frac{13}{16}=16\frac{16}{29}$. Therefore B will travel $30+16\frac{16}{29}$, or $46\frac{19}{29}$ miles.—T. HALPIN, *Cedarburg.*

120.—A, B and C start together to travel around an island 90 miles in circumference; they travel at the rate of 2, 4 and 6 miles an hour respectively; how long will it be before they are together again if they travel 12 hours a day?

They travel 24, 48 and 72 miles a day, or it takes each respectively $3\frac{3}{4}$, $1\frac{6}{7}$ and $1\frac{1}{4}$ days to travel around the island. Bring these mixed numbers to whole numbers and find the least common multiple, which will be the required time.

A travels around the island in $3\frac{3}{4}$ days, or 4 times in 15 days.
B travels around the island in $1\frac{6}{7}$ days, or 7 times in 13 days.
C travels around the island in $1\frac{1}{4}$ days, or 4 times in 5 days.

$$5)5 \quad 13 \quad 15$$
$$1 \times 13 \times 3 = 195 \text{ days.}$$—T. HALPIN, *Cedarburg.*

Second Answer.—Each would be at the starting point, in the least common multiple of the days required by each to make a revolution, $\frac{15}{4}$, $\frac{15}{8}$, $\frac{15}{12} = \frac{15}{4} = 3\frac{3}{4}$ days.—R. SPOOR, *Brandon.*

Third Answer.—B gains 2 and C 4 miles an hour on A. Hence, B will pass A every $\frac{90}{2}$ hours=45 hours=2,700 minutes; and C will pass A every $\frac{90}{4}$ hours=1,350 minutes. Then the least common multiple of 2,700 and 1,350 will express the number of minutes required for them to pass A together.

$$\left.\begin{array}{l} 2{,}700 = 3\times3\times3\times5\times5\times2\times2 \\ 1{,}350 = 5\times5\times3\times3\times3\times2 \end{array}\right\} 27\times25\times4 = 2{,}700, \text{ L.C.M.=number of minutes.}$$

2,700÷60=45 hours, which divided by 12=$3\frac{3}{4}$ days.—J. H. BUNKER.

Another Solution. $\frac{90}{2}$=45, the number of hours required for A to travel around the island, and as B travels 4 and C 6 miles an hour, they travel respectively two and three times as fast as A. Hence B will travel two and C three times around in 45 hours, when they will be together at the place of starting.—J. H. B.

Fourth Answer.—A. would travel around in 45 hours; B. in $22\frac{1}{2}$ hours; C. in 15 hours. The common multiple of these numbers is 45. Therefore at the end of 45 hours travel, or when A. has accomplished *one* circuit, B. *two* and C. *three*, they will all be together again.—S. D. F.

Fifth Answer.—A. goes once around in 45 hours; B. in $22\frac{1}{2}$ hours; C. in 15 hours; hence they will be together again in 45 hours, which is the least common multiple of 45, $22\frac{1}{2}$ and 15. If they travel 12 hours a day, they will be together in (45÷12) days=3 days 9 hours.—J. B., *Fond du Lac.*

NEW QUESTIONS.

123.—Desired to know the number of newspapers published in Wisconsin, where published, by whom published, and the name of paper and editor? Also, desired to know the name of the oldest editor and paper in Wisconsin.—D. M., *Windsor.*

124.—Wherein does the Constitution of the United States differ from the Constitution of the State of Wisconsin?—*Ib.*

125.—Is the school law, requiring the Constitution of the United States and of the State to be taught in the common schools of the State, desirable and wholesome?—*Ib.*

126.—When and by whom was America first discovered?—P. P. IVERSLEE, *Iola.*

127.—What was the name of the first white person born in America within the limits of the United States, and what noted person descended from him?—*Ib.*

128.—Parse *else* in this sentence,—"I had nothing *else* to eat."

129.—Will some one furnish the "Box" with a philosophical explanation of the phenomenon of frost crystalization as is appears upon windows in extreme cold weather. What causes it to assume such varied and fantastic forms, under apparently like conditions?—S. D. F.

130.—If the democratic theory of government is the correct one, is it not as good for children of a smaller, as those "of a larger growth;" and should it not be applied in the government of schools?—*Ib.*

131. Has the earth more than two motions? Has it a motion of greater and less inclination?—E. L. WRIGHT, *Fountain Prairie.*

132.—What makes the water of the ocean salt?—CARRIE L. BONSTEL, *Dekorra.*

133.—A man and a boy can drink a barrel of water in 52½ days. In what time will each drink it, if it take the boy 10¼ days longer than the man?—MARY A. REID, *Alderley.*

134.—Who will explain the words, in regard to Bonaparte, on p. 34, McGuffy's Fifth Reader, first paragraph, "the *orphan* of *St. Louis*"?—*A Teacher.*

135.—The area of a right angled triangle is 30 square rods; the sum of the sides is 30 rods; required the length of each side.—J. R. RALPH, *Hazel Green.*

136.—In mixing starch with water, what causes it to appear *very thick* while stirring it, and *thin* when it is no longer being stirred?—PEN.

137.—How is it that in the Indian name, "Chicago," the *ch* is pronounced like *sh*, while in other words of the same origin, it is generally pronounced like tsh?. Is it a corruption?—*Ib.*

138.—Is the word "newspaporial" admissible?—*Ib.*

139.—Will some one correctly define the following:

Danebrog,	Plug Uglies,	Calsomining,
Schreiberzite,	Three Kings of Orient,	Tristan and Isolde,
Mousignare,	Darwinism,	Walkuere,
Beteigeuze,	Scallawag, (see cattle reports in newspapers),	Neibelungen,
Bear-wallow,	Boor—(Dutch farmer at Cape of Good Hope),	Syllabus (see late history of Rome),
Buffalo-wallow,	Muscovite (or Moscovite?),	Old Catholics,
Kindergarten,	Louvre,	Passion Play,
Winter-King,	Decalcomania,	Escurial (or Escorial),
Jeunesse Dorée,		Alhambra.
Sapis Sapientes,		

A GENERAL QUERY.

How many readers of the Journal, especially *teachers*, will try and send in new and interesting matter to this magazine during the year 1873? How many will aid in introducing *new features*, which will enhance its variety and literary value, thus enabling it to successfully compete with old and renowned publications of the same character? If variety is the spice of life, we may safely assert that it is the very soul of periodical literature, and to be successful it must ever aim to vary its contents, raise its intellectual standard, and—avoid repetitions. Supposing some teacher or other should, in looking over the chronological tables of an almanac, find chronicled there a great name, or a great event—supposing he should write, or compile, or translate, a short but pointed article on the subject and send it to you to be published in the Journal of the month with which it it chronologically connected—and supposing others should follow his example, thus forming a series of varied contributions which will make history a living thing and link it directly to every day life—would such a feature be acceptable to the Journal?

No dictionary is complete! Studious readers are constantly annoyed by

meeting with words not to be found in Webster's Unabridged even. Supposing they were to send the words not contained in Webster, to your Journal for explanation and definition, a valuable addition to the dictionary might thus be formed in time.—PEN.

SCRAPS.

[CONTRIBUTED BY PEN.]

Diminution of Priests in Spain.—In the year 1830 there were, in Spain, 168,000 priests, to a population of about 7,000,000 inhabitants. In 1861, there were but (!) 40,000, while the population had increased to 16,000,000.

Small Views of Great Men.—Just a hundred years ago, a proposition to enlarge the plan of studies for the common schools of Prussia was submitted to the King, Frederick the Great. But he dismissed the matter, saying: "No, no, be content with the catechism and the four species. To allow more, would be to saw off the branch on which we sit!" Prussia has fared better since!

Napoleon I. once replied to a savan, who remarked on the glaring ignorance of French soldiers, "If they knew more they would care less for *gloire*, and be useless to me. Thinkers are poor fighters!"

We think Napoleon III, has had a chance to find out the fallacy of his uncle's axiom.

The Tunnel of Mont Cenis.—This tunnel, one of the most important works of engineering of modern times, cost 65,000,000 of francs, and was finished in about sixteen years. Its length is about 12,220 meters; its rise on the French side is about 1.200, on the Italian, 1.45. The head men employed were Sommeiller, Grandis and Grattonis, all of them from Piedmont.

When?—"The calibre of the mammoth gun 'Woolwich Enfant,' has been enlarged from 11.6 to 12 inches, and even this enormous capacity, it is expected, will be excelled in time not very remote. To judge by what has been done for the improvement of fire-arms during the last twenty years, they will speedily become absolutely perfect."—*Military Gazette.*

News like the above furnish food for deep thought. When will our educational papers be able to make a similar report of teacher's wages, and close with the remark that our systems of education are now enjoying an equally bright prospect of "speedily becoming absolutely perfect?"

Italian Marble.—This glorious product of nature is one of the greatest treasures that Italy possesses. Carrara is the central depot for the marble trade, and one-third of its inhabitants are employed in it. There are about 478 quarries in the marble district of Carrara alone. Among the countries that import marble from Italy, are, the United States of America, England, France, Russia and Belgium. They purchase for about twelve millions of francs annually. Germany imports only the first-class quality of marble for statuary of a high order, as the German quarries furnish a good, though not first-rate article for works of minor importance.

"*The Weed.*"—The poison contained in the tobacco crop of a single year is sufficient to kill the entire population of the world, which is 1,300 millions! Put this (the statement, not the poison,) in your pipe and smoke it, ye lovers of the weed!

And here is another. A member of the French legation in London (we forget the name, but it happened only about one or two years ago), had his lip bitten by a parrot. He did not mind the wound, which was trifling, and immediately

after resumed his cigar. A few hours later he was seized with all the symptoms of poisoning, the lip ulcerated, mortification ensued, and, in about twenty-four hours after, the young man was a corpse. The verdict of the physicians stated that his death was caused by the absorption of *nicotin* through the wound.

Some of the most terrible diseases and a miserable death are the consequences of the use of tobacco in childhood and youth. A child, three years of age, was brought to a London hospital; it was perfectly idiotic, and its spine, arms and limbs were paralyzed. It could hardly speak, and its eyes were badly affected; and yet it had been an intelligent, healthy child but six months before. But its mother, a poor working woman, gave it a pipe and some tobacco to keep it out of mischief (?), and thus worked the ruin of her child!

Ventilate!—Winter is the time when the subject of ventilation claims special attention, particularly from teachers. It is simply a question of health or disease—whether from 20—100 more or less tender young organisms are to be exposed for at least four hours each day to the influence of a deadly poison; or whether they shall be allowed to draw cheerfulness, vigor, and beauty from Nature's other "sweet restorer," balmy, cool, fresh air.

Would you have them do the latter, *ventilate*! Not by opening the door—that causes cold feet and does not materially benefit you, unless you open and shut your awkward ventilator very often, in order to get all the fresh air you want. Nor must you open your windows below—that would expose the children's heads and throats to the draught and cause neuralgia, coughs and colds. Ventitilate your room by letting down your windows at the top, and where that is impossible, have a couple of the uppermost panes removed, and, if necessary, replaced by cheap tin ventilators—you can get one for about 20 cents. Each ventilator must have *two* openings, one above the other—the warm, impure air will escape from the upper aperature, while the cold, pure air comes in through the lower. Never ventilate in less than two places of the room.

FLASHES OF THOUGHT.

(TRANSLATED BY PEN.)

'Tis grateful to be loved and known
As benefactor, and as friend,
But sweeter, holier 'tis, I own,
Unknown to all our aid to lend.

HERDER.

No more than rust will brighten steel,
Or mud improve the crystal spring,
Or filth make linen cleaner, will
Misfortune strength for virtue bring.

MIRZA SCHAFFY.

In life there are
Such days, 'tis true,
When chastisement
Ennobles you;
Physicians thus
May often give
A poisonous drug
And bid you live.
But poison is not therefore fit for food,
Nor' will misfortune always work some good.

Ib.

Editorial Miscellany.

BOARD OF REGENTS OF NORMAL SCHOOLS.

The board of regents of normal schools, at its semi-annual session, held at the capitol, January 28–31, made a change in the manner of conducting the institute work. The Superintendent of Public Instruction is to have the general oversight of the entire institute system. Hon. W. H. Chandler is associated with him in its immediate supervision. The state, for the present, is to be divided into three institute districts, each district to be in charge of an instructor, connected with the normal school within the district, and to be appointed by the above committee. Professor Robert Graham, of the Oshkosh district, and Professor D. McGregor, of the Platteville district, have been appointed by the committee to the charge of those districts. All applications for institutes must be made to the superintendent of public instruction, and such applications will, as promptly as possible, be acted upon by the committee. The following regulations and suggestions have been decided upon by the board and the committee:

1. No pay can be allowed County Superintendents for personal services in their own Institutes.

2. No pecuniary aid can be furnished, unless application is first made as above, for help to conduct the Institute.

3. The compensation of instructors, not furnished by the committee, and their expenses and the expenses of lecturers, and such incidental expenses as are absolutely necessary for the efficiency of the Institute, will be allowed.

The compensation of such instructors will be determined by the committee.

The bill for incidental expenses must certify *Items*.

4. The time for holding the *Spring* Institutes will be from the middle of March until the first of May, and the *Fall* Institutes will be held in the months of September and October, and it is desired to have all the short term Institutes held, if possible, within the periods specified.

The following elementary course of study for one year was ordered to be established in each normal school, to go into effect the next academic year:

First Term—Arithmetic, English Grammar, Geography, Use of Globes and Map Drawing, Essays, Spelling, Gymnastics.

Second Term—Elements of Natural Philosophy, Physical Geography, United States History, Spelling, Gymnastics.

Third Term—Physiology and Laws of Health, Elements of Botany, Civil Government. Drawing, Reading, Writing and the Rudiments of Vocal Music, shall be taught each term of the course.

Students completing the above course, and pursuing a satisfactory examination therein, shall, upon the recommendation of the faculty, receive a certificate of graduation in such course from the board of regents.

Legislation Proposed.—Bills have been introduced (1) to provide for electing district school officers annually—a change of doubtful utility; (2) to permit districts to compensate the clerk, which is right; (3) to allow district boards to purchase maps, etc., to an amount not exceeding $75 annually, which needs to be very carefully guarded, if passed, to save honest, but ignorant men from

swindlers; (4) to have natural philosophy, botany, philosophy and the laws of health taught in all the common schools; (5) to compel children to attend school 16 weeks every year, which would prove a dead letter, here as elsewhere; (6) to look after truant or vagrant children, in cities and villages, which is more sensible; (8) to compel teachers to attend institutes, or not get a certificate, which is too much like pulling a horse to to the river, and his nose to the water, thinking he will drink even if not dry; (9) to give a third grade state certificate, good for two years, to those who take a successful course of one year in a normal school; (10) to put the annual school meeting uniformily on the last Monday in August, except in districts having graded schools, which is well; and (11) to repeal section 36 of the township law, which is needed.

IN MEMORIAM.

Again the funeral knell breaks the silence of the winter air. The last month of the old year witnessed the departure of one of our most esteemed superintendents; the first of the new, that of a most esteemed and well-known teacher. The first paragraph of the matter below tells the sad event:

"Died, in this village, on Tuesday, January 21, 1873, JOHN KENNEDY PURDY, aged 39 years 9 months and 18 days.

"An overpowering sense of personal and public loss prevented us from giving last week such attention to the foregoing notice as the character, life and public services of Mr. Purdy demand; and at the present writing even we feel how entirely inadequate are any words of ours to do justice to the subject and the occasion.

"Mr. Purdy was born in Mt. Pleasant, Morgan county, Penn. April 3, 1833, and was one of a family of five, having three brothers and one sister, all of whom, as also his mother, now 65 years of age, survive him. In early boyhood he removed with his parents to Chili, Monroe county, New York, where his father died in September, 1844. He attended the common district school of the neighborhood, and it is said of him, that at twelve years old he was master of Adams' Arithmetic. At the age of nineteen he had learned the carpenter and joiner's trade, and followed that occupation for three years. In 1854, he went to Rochester, N. Y., and there attended a private school for one year, working nights and mornings to pay for his board. The next year he entered the Freshman class of Rochester University, but at the end of his Sophomore year—having never received any assistance from friends—was compelled for want of means to relinquish his college course, and soon thereafter (in 1858) immigrated to Wisconsin and took up his residence in this village.

"But it was not alone as a teacher that Mr. Purdy had endeared himself to this community. In all the manifold relations of life, he was the genial, courteous, accomplished, patriotic, public spirited gentleman. At the time of his death he was, and for two years had been, Superintendent of the Sunday School connected with the Congregational Church in this village. Having in his own experience realized the possibility and the joy of youthful consecration, (he professed faith in Christ and united with the Baptist Church of Chili, N. Y., when only nine years old,) he entered into the Sunday School work with that faith and ardor which are the precursors of success.

"And in society, who that knew him does not recall his uniform amiability, his sterling integrity, his manly independence, prescribing the strictest rules for himself, joined with Christain charity, which never condemned others—his modesty, affability and benevolence. Here, in 1863, he was married to Miss Hortense L. Alling; here, in 1868, his child, and in 1869, his wife died; here we knew him; here we have witnessed his trials, his conflicts, his bereavements, his successes, and we all bear witness to the fact that he was from first to last the Christian gentleman.

"Here he at once commenced his vocation as a teacher, by opening a select school, which was continued until 1859, when he became connected with our public schools, and continued at their head until 1865, holding meantime the

office of county superintendent of schools for a term of two years, and serving for a short time, in 1864, as first lieutenant of Co. G., 4th regiment Wisconsin volunteers.

"In 1865, 'better wages' lured him to Milwaukee, where he remained for two years. This community, fully appreciating its mistake, invited him to return; and in 1867 he recommenced his labors here, and continued them without interruption until the Thursday preceding his death.

"Of his preëminent success as a teacher, it is unnecessary that we write. He possessed that rare combination of talent which enabled him to become not only distinguished as a thorough and progressive instructor, but likewise one of the most successful disciplinarians and organizers. The public schools of Fort Atkinson, as they stand to-day, and the public sentiment which sustains them, are the result of his earnest, practical, and patient labor among us as a teacher. His very life was in the work. In the cause of education, under the free school system, he was an ardent enthusiast, and looked forward to its future progress and development with high hopes. In all that tended to the enlargement of the scope of this system and the perfecting of its details, he was a most prominent worker, and the highly honorable position of president of the Wisconsin State Teachers' Association, to which he was elected last summer, and which he held at the time of his death, was a compliment fully earned and most richly deserved.

"His funeral was attended last Sunday from the Congregational Church, and although but one of his relatives was present that building was filled to its utmost capacity, and very many unsuccessfully sought to gain admission. His associate teachers, of the past as well as of the present, testified their respect and affection for him by adorning his coffin with a large and beautiful cross, and his pupils by contributing two magnificent boquets—all of natural flowers, and chiefly white camelias. The entire audience were mourners, and as we listened to the solemn services, the following words, written many years ago, came freshly into our mind:

> "For some, friends mourn; for some relations grieve;
> (Few go without some kindred soul to leave),
> But when in one we both united find
> The mildest manners and the bravest mind—
> One who for years the path of science trod,
> Devoted both to learning and to God—
> Not relatives alone their tears shall shed,
> But all who knew him living, mourn him dead."

—*Fort Atkinson Herald.*

COMPULSION.

After much talk and discussion, the idea of compulsion in connection with education has not met with much favor in this State. It is felt that it will be time enough to speak of compulsion, as regards attendance upon the public schools, when we have fairly tried the virtues of attraction by making the schools what they should be. In the next place, the statistics of school attendance, so far as they have been gathered, do not present any alarming symptoms. The attendance of children upon the public schools, between seven and fifteen, which is the important part of the school period, is 8 per cent. better this year than last, and will improve every year if the schools improve. It should be remembered that the attendance upon other schools is mainly from this class, and, if added, would materially improve the showing. A truant and vagrant law for cities and villages is all that seems to be needed, if anything is needed, in this direction. About 80 per cent. of the above ages now attend school.

The same reasoning which applies to pupils and parents applies to teachers. The committee on "compulsory attendance on institutes," appointed at the late convention, very sensibly reported adversely to any such measure. The better class of superintendents feel no need of presenting such an inducement to their

teachers to avail themselves of such a ready means of improvement. The reason is that such superintendents have the confidence of their teachers, and have institutes that are worth attending. To give inefficient superintendents a power of compulsion, is to put an engine of petty tyrranny into their hands, which, if used in a few cases, would simply help kindle up smouldering opposition to the superintendency, and do no good. It is quite possible that it might be well to require superintendents to note, upon all certificates issued, the fact of attendance or non-attendance upon the institutes of the previous year. But even this is not without its difficulties. P.

CORRESPONDENCE.

EDUCATION IN TEXAS.

AUSTIN, Texas, January 11, 1872.

Gen. Samuel Fallows, Superintendent Public Instruction,

DEAR SIR: You are probably aware, by this time, that I have exchanged the cold and wintry north for the sunny south, and I must confess, that I am not the worse off for the change! The contrast between the customs and institutions of the southern people and those of the northern is almost as great, I might say, as is the contrast between the two climates. The late civil war has undoubtedly wrought a great many changes, some for the better, some for the worse. I find on the whole, that the all-important subject of education is not receiving that liberal share of sympathy, attention, and support, which it ought to receive, and which it actually does receive in the north. That fine system of public schools, which is being gradually perfected, and which is being worked on so grand and magnificent a scale in the northern states, will not operate so smoothly nor yet so extensively here as there.

But it is not from a lack of appreciation of the intrinsic merits and the incalculable benefits which that system, if properly managed, confers, nor is it owing to any feelings of antipathy or aversion, that the system does not thrive as well here and bear the same fruits as it does in the north. The cause of all this is to be found somewhere else, to-wit: in the general depression and exhaustion of the of the people. There are too many official barnacles, too much carpet-bagism here. When this dire scourge has once been removed, and it can only be done by speedy and wise legislation, then I can see no reason in the world, why that beneficent system of public schools should not succeed with the generous southern people, as it does with the enlightened northern. The southern states in general pretty much resemble in their present condition those Roman provinces and dependencies of old, *misruled* and *mismanaged* by a set of reckless and unprincipled pro-consuls. What little I can do to further the cause of public education in Texas, I will gladly do. But it is not my intention to weary your patience with a lengthy letter, and therefore I will conclude.

Most respectfully yours, J. BICKLER.

ELEMENTARY TEXT-BOOKS IN SCIENCE.

Editors Journal of Education:—Next to the glory which accrues to him whose name appears in the newspaper misspelled, comes that of him who finds himself misreported in print.

What I said concerning elementary text-books in the sciences, at the late meet-

ing of the Principals, was not quite understood by the Secretary. I said that Miss Youmans has written a Botany; Balfour Stewart, a work on Physics; Roscoe one on Chemistry, and that Kingsley, better known as a man of letters, has written not a text-book on geology, but a book called "Town Geology," which teachers and pupils alike can read with pleasure and profit. These are all published by the Appletons of New York.

I would not care to make the above correction just for the sake of being right on the record; but it gives an opportunity to call the attention of teachers generally to these very valuable publications. They have been written by men of the highest eminence, except the Botany, which could hardly be made better than it is by the best man of them all. Those by Roscoe and Stewart are of a series of Science Primers, of which the first, the Introductory Primer, is from the pen of Huxley. All are cheap enough to be within the reach of every teacher, and elementary enough to meet the requirements of nearly all grades of schools. It is stated in the Preface of the Primers that "the object of the authors has been to state the fundamental principles of their respective sciences in a manner suited to pupils of an early age."

Tyndall's "Forms of Water" may properly enough be added to the above list. But it is hardly worthy while to name all that can be found by any one who has he will to look. Certainly, those teachers are now without excuse who do not thear and heed the call for instruction in the "Natural Sciences."—J. C. P.

PHYSIOLOGY AND HYGIENE.

WAUPUN, January 31, 1873.

S. FALLOWS, *State Superintendent of Schools:*

DEAR SIR:—I visited our district school not long since and was forcibly struck with this thought: We are trying to give our children an education, but are leaving out of their education one of the most important and vital parts. Not a scholar was studying physiology and hygiene. As a people, we eat many things that are calculated to cut life short, and our girls, especially, are not properly clothed. Our cooking is bad—in many instances very unhealthy, and yet we keep on in the old ruts or get into deeper ones still. Now it seems to me that we should have a small text book on the subject of health, for our children to study in school; something different from any work yet published. I would suggest that it be a cheap work, so that it could and would be generally used—say not to exceed $1.00 in cost. I have a work before me, "How to Treat the Sick Without Medicine," written by JAMES C. JACKSON, of Dansville, Livingston county, N. Y. It contains 537 pages—a single copy costs $2.25—one-half dozen copies $1.25 each. Now if a book of this size can be sold for $1.25, a suitable book for schools can be produced for 50 cents to $1.00. Can you not bring this subject before our State Legislature? I feel that in no other way can so much good be done. Why, what is the use to educate a child and have it eat, drink, dress and breathe so as to die, perhaps before it has arrived at maturity? Teach the young to avoid the rocks on which so many of the present generation have already foundered. Permit me to suggest one or two thoughts more and I have done. Such a book should be simple enough to be studied by a child 10 years old. If prepared for older children, many would never study it. It should contain questions with regard to the best kinds of food and the best methods of cooking it; tables showing the elements of food, chemically analyzed, etc. I have never seen JAMES C. JACKSON, referred to above, but have read much of his

writings and believe he would be fully qualified to write or help very much to write such a work.

Hoping that you will give our Wisconsin schools through your influence such a work to study,

I remain the well wisher of all the Badgers,

G. V. D. BRAND.

SCHOOL HOUSE GROUNDS.

MESSRS. EDITORS—For the past six years I have traveled extensively over the northern and some of the southern states, and I have often wondered at the desolate appearance of all the school houses. Not one tree, plant or shrub have I seen set out to adorn the school ground, to make it a pleasant and inviting place for the children.

I helped organize this district in December, 1849, twenty-three years ago. Now, supposing we had set out our school grounds with ornamental trees at that time, what a beautiful place we should now have, instead of the desert one we have got. This coming summer our house must be thoroughly repaired, and, when that it is done, I want to set out treees and flowers and make a nice place of it. Now, can you give me any information as to kinds, and the best way to proceed? I have got a pretty tough district to deal with—Dutch, Irish and uneducated Americans—but I am determined to make our school grounds look better. Has the thing ever been tried? Would it be better to let each child have a little plat, or have it all common stock?

Yours respectfully,

———— ————, *Clerk, District No.* ——.

[REPLY.—Your plan is greatly to be commended. It would be impossible for very small scholars to take care of a separate plat. A certain degree of advancement might entitle them to the privilege. Every pupil might have a special tree, set out around the borders of the lot. Scholars, who could be led thus to ornament and care for the school grounds, would improve in morals and learn better. May your example be widely followed.]

Educational Intelligence.

WISCONSIN.

ST. CROIX VALLEY TEACHERS' ASSOCIATION.—River Falls, November 19th, 1872. Pursuant to a call for a Teachers' Association, a respectable number of persons assembled at the Institute.

The meeting was called to order by Prof. CADY, who stated its object to be the organization of a Teachers' Association for the St. Croix Valley. On motion E. F. CASE was chosen temporary chairman, C. C. MCINTYRE Secretary. On motion the chairman appointed Messrs. CADY, HOWARD and WILLIAMS a committee to draft a constitution for the government of the Association. For a permanent organization the following officers were elected: M. E. CADY, President; C. E. MEARS, Vice President; MARY R. LORING, Secretary; C. C. MCINTYRE, Treasurer; E. F. CASE, H. S. BAKER, C. FENLASON, of Polk county, FRANK CHAPMAN, of St. Croix county, and M. E. CADY, Directors.

A. H. WELD, former Superintendent of St. Croix county, delivered a lecture on "Natural and Artificial Agencies in Education," and M. E. CADY one on the general subject of Education. The following resolutions were discussed:

Resolved, That corporal punishment should be excluded from schools.

Resolved, That the number of hours for the sessions of primary schools, should be reduced.

And the following were discussed and adopted:

Resolved, That it is not the teacher's fault that pupils play truant.

Resolved, That the state of Wisconsin should adopt a uniform system of text books.

Resolved, That the thanks of this association are hereby tendered to the citizens of River Falls for the hospitality shown the several members.

BROWN COUNTY.—The Board of Supervisors have divided the county into two Superintendent districts. Mr. R. CHAPPELL, of Fort Howard, has been appointed Superintendent of the First District, Mr. M. H. LYNCH retaining the other.

WALWORTH COUNTY.—To fill the vacancy caused by the death of Superintendent MONTAGUE, Mr. S. BALLARD, of Sharon, has been appointed. This appointment, like that of Mr. CHAPPELL'S, will hold good for the remainder of the year, a new election taking place next fall. W. A. DE LA MATYR, of Elkhorn, first received the appointment, but resigned.

MANITOWOC COUNTY.—Two associations of teachers have been formed here. The Southern Association had a lively meeting recently at the Mulholland Schoolhouse, in Meeme, as we gather from the report of the Secretary, J. C. SMITH, in a Manitowoc paper.

AUGUSTA.—A misfortune has overtaken this enterprising village in the loss of its school house, worth $4,500. The winter term has been sadly interfered with in consequence.

JANESVILLE.—From the last semi-annual report of the Board of Education we take some items of general interest:

"By holding the schools to a known policy and uniformly to the same policy, the board has hoped to see them grow strong in the affection of the whole people, so that ultimately the childless citizen with the parent shall esteem the school a profitable investment for part of his revenue, in the form of school tax, and that, hereafter, the schools shall be deemed a fair price which the present pays for the security of property and the happiness of citizens in the future. The board believes that, as heretofore, the council found reasons for congratulating the citizens upon the condition of the city schools, so also in the present and future, the council will have reason to continue the confidence reposed in this important department of city government.

"The board is unable to secure experienced teachers for all the schools, hence some departments have not attained the average expected in excellence of management; yet the schools show that the teachers believe and practice a wholesome govenment as a judicious parent would, varied, of course, by the excess of numbers in the school over the family. Under this management children are taught self control and are more and more studious every successive term. * *

"Success attended the efforts made to heat and thoroughly ventilate these three houses. Six large ventilating chimneys were built, connecting with the school rooms, and carrying the smoke pipes interiorly from the furnaces; which pipes radiate sufficient heat to raise the foul air from the rooms, thus forming, with the hot air conductors, a perfect system of circulation, meeting the want long felt in all these houses for abundant warm air."

STOCKBRIDGE.—We are pleased to learn from Mr. SPRAGUE that the school has gone on finely, and that pupils and parents seem deeply interested in the work.

It is not amiss, perhaps, to chronicle the fact that Mr. and Mrs. SPRAGUE were presented with a Thanksgiving boy last November. The happy father says (he will pardon us for saying it here):

"I am not certain but that I am the first normal graduate in the state to become a parent. We have thought it very appropriate to confer upon it the name of "CHARLES," in honor of CHARLES H. ALLEN, who has been such a zealous worker in the normal field of Wisconsin."

GENERAL.

ACCORDING TO THE CENSUS of 1870, the total number of schools in the United States was 141,629; the number of teachers, 221,042, of whom 93,320 were males, and 127,713 females. The total number of pupils was 7,209,938—3,621,996 being male, and 3,587,942 female. The total income of all the schools was $95,404,726, of which $3,663,785 came from endowments, $61,746,039 from taxation, and $29,992,902 from all other sources, including tuition. The total income reported is nearly three times that for 1860, and nearly six times that for 1850. It is considered quite impossible that there should have been any such increase; and the apparent augmentation is, without doubt, referable to a failure on the part of the former census officials to secure complete returns. Of the total number of schools reported, the public schools were 125,059; classical, professional, and technical, 2,545, and others, 14,025. The total number of teachers in the public schools was 183,198; and in the classical, professional, and technical, 12,767. The number of pupils in the latter class was 245,190, and in the public schools, 6,228,060.

THE CONNECTICUT LEGISLATURE has passed a law compelling the attendance at school, for at least three months each year, of all children between certain specified ages. The good people of that state reason that if they have a right to punish crime they also have as good a right to prevent it by such means as they have adopted.

AS A PROOF that education is, even in Russia, on the way to progress, statistics have been collected showing, that in the province of Moscow, at least one child in ten now enjoys the benefits of an elementary education. It should be remembered that the proportion in highly-educated countries is one in six.

MISS P. D. BULLOCK, a young lady who graduated at Lawrence University Wisconsin, and took the regular degree of A. M., and who taught in the Hartford Collegiate Institute, in Lyon county, and in the Oswego College, Labette county, New York, left on Friday to enter the medical department of Michigan University, at Ann Arbor, as a student of medicine, where in due time she will take the degree of M. D., and commence the practice of the healing art.

OLIVER WENDELL HOLMES, Jr., has been appointed lecturer on Jurisprudence in Harvard's law school.

PROFESSOR MURRAY, of Rutger's College, has been called to accept a professorship in the University of Japan.

MISS ANNIE NEWS, the young lady who graduated at Michigan University at the head of a class of eighty students, is going to practice medicine in Newport.

THERE are 40 law schools in the United States, with 129 professors and 1,722 students; and 117 theological seminaries, with 285 instructors and 2,062 students. The table of medical schools indicates 57 known as regular, 4 as eclectic, 2 as botanic, 6 as homœopathic, 9 as dental, and 16 as pharmaceutical; total, 94. There are also 47 scientific schools of all kinds and 114 normal schools, with 10,922 pupils.